

wherein said base section defines a central aperture having a truncated circular shape for receiving the complementary shaped truncated circular cross-sectioned spindle to prevent rotation of the spindle nut retainer about the spindle;

wherein said peripheral section defines one or more longitudinal windows into which one or more corners of the nut protrude, preventing rotation of the nut; and

wherein said peripheral section includes inwardly extending portions for snapping over the nut to lock said spindle nut retainer in place.

21. The spindle nut retainer of claim 20 wherein said windows extend from said base section to an open end of the peripheral section opposite said base section.

22. The spindle nut retainer of claim 20 wherein said windows extend from said base section to an end of said peripheral section opposite said base section closed by a continuous ring.

23. The spindle nut retainer of claim 22 wherein said peripheral section further defines nut engaging surfaces on an interior surface.

24. The spindle net retainer of claim 21 wherein said inwardly extending portions are flared ends of fingers upon the peripheral section.

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### **REMARKS**

This Amendment is responsive to the Office Action of November 25, 2002. Reconsideration of the rejections of Claims 1-10 and 12-17 is respectfully requested. By this Amendment Claims 1, 7, 8 and 13 have been amended. Claim 11 has been cancelled. New Claims 17-24 have been added and consideration of these new claims is requested.. The amendments and new claims do not add new matter. Allowance of the claims of this application is requested.

### **Drawing Amendments**

New formal drawings are attached including amendments as required by the Office Action. The proposed amendments add no new matter.

Figures 2 and 3 have been amended to remove numeric dimensional information. Additionally, Figure 3 has been amended to remove text other than reference characters. Additionally, one view from Figure 3 has been removed.

The Office Action states that the continuous ring feature of Claim 7 is not identified in the drawings. Applicant requests reconsideration of this statement and refers to amended Figure 3 as well as the specification which states, "A second end 33 of the peripheral section, opposite the base section 22, may be a continuous ring." [Page 4 Line 2-3]

The Office Action states that the figures do not show "corners 64 of the nut" as stated by the specification at Page 3 Line 30. Applicant refers to amended Figure 1 and requests reconsideration.

The Office Action states that both reference characters 60 and 62 are used to designate "nut". Applicant has amended the specification such that only reference character 60 is used to designate "nut".

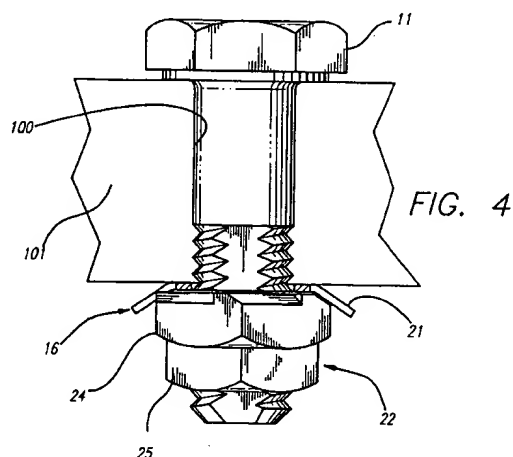
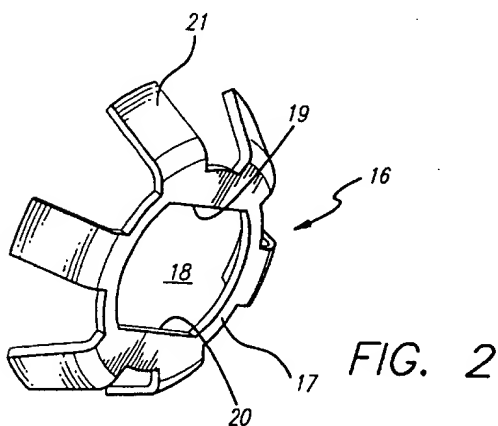
#### **The §112 Rejections**

Reconsideration of the rejection of Claims 3, 9, 14 and 15 as being indefinite under 35 U.S.C. §112 is respectfully requested. The Office Action states that the terms "D-shaped" and "T-shaped" within the claims are unclear because they can be interpreted in a number of ways. Applicant has amended the specification to further define the term "D-shaped". Applicant has cancelled Claim 11, the only claim including the term "T-shaped".

#### **The §102 Rejections**

Reconsideration of the rejection of independent Claims 1 and 8 under 35 U.S.C. §102 over U.S. Patent 5,967,723 to Duran [hereinafter Duran] is respectfully requested. The Office Action states that Duran discloses all elements of Claim 1 and 8 including an integral base section and peripheral section maintaining a cup-shaped configuration. Applicant respectfully disagrees. Applicant has amended Claim 1 to add additional description of the "cup-shaped configuration" relationship between the base section and peripheral section of the spindle nut retainer. Specifically, Claims 1 and 8 as amended include a base section and a generally perpendicular peripheral section together maintaining a cup-shaped configuration while the spindle nut retainer is in place over the nut. The additional description is supported by the

original specification, namely Figures 1, 3 and 4. Duran discloses a nut and bolt locking system with a washer 16 having a main body portion 17 and a number of spaced ears 21 (see Figures 2 and 4 from Duran reproduced below). The ears 21 are angled with respect to the main body portion 17, but are not generally perpendicular to the main body portion 17. In combination, the main body portion 17 and ears 21 do not have a cup shaped configuration, particularly when the washer is in place against the nut. Additionally, the washer of Duran would not function if having a cup shaped configuration. Ears 21 which would be generally perpendicular to the main body portion 17 would not properly engage with the angled flats on the face of the nut. Thus the disclosure of Duran does not anticipate Applicant's Claims 1 or 8 and reconsideration is required.



Further, with respect to Claim 8 the peripheral section includes a plurality of fingers with flared ends. Duran does not disclose fingers having a flared ends. Thus the disclosure of Duran also does not anticipate Applicant's Claim 8 and reconsideration is requested.

Reconsideration of the rejection of Claim 2 is respectfully requested. Claim 2 includes a peripheral section with fingers having two angled nut engaging surfaces. Duran discloses two angled surfaces, but these surfaces are not angled nut engaging surfaces upon a finger of a peripheral section. As a result, under § 102, Claim 2 is not anticipated by Duran.

Reconsideration of the rejection of dependent Claims 3 and 4 is respectfully requested. Claims 3 and 4 depend directly from Claim 1 which is believed allowable for the reasons set forth above.

Reconsideration of the rejection of Claim 5 over Duran is respectfully requested. The Office Action states that Duran discloses a base section that is reinforced around the central aperture. Applicant respectfully disagrees. Applicant's specification states, "the area of the base section around the aperture may be of increased thickness for structural reinforcement (Page 3, Paragraph 1). Although the Office Action has added indicators to a figure of Duran pointing to areas of the main body portion and labeling these areas as reinforced, Applicant respectfully states that there is no indication in the specification or Figures of Duran that these positions or any other positions on the main body portion of Duran are of increased thickness or are reinforced in other ways.

Reconsideration of the rejection of dependent Claims 9 and 12 is respectfully requested. Claims 9 and 12 depend directly from Claim 8 which is believed allowable for the reasons set forth above.

Reconsideration of the rejection of independent Claim 13 over Duran is respectfully requested. The Office Action states that Duran discloses all elements of Claim 13 including an integral base section and peripheral section maintaining a cup-shaped configuration. Applicant respectfully disagrees. Like Claims 1 and 8 describe previously, Applicant has amended Claim 13 to add additional description of the "cup-shaped configuration" relationship between the base section and peripheral section of the spindle nut retainer. As previously stated, the main body portion and ears of Duran do not have a cup shaped configuration, particularly when the washer is in place against a nut. The disclosure of Duran does not anticipate Applicant's claim 13 and reconsideration is required.

Reconsideration of the rejection of dependent Claims 14-16 is respectfully requested. Claims 14-16 depend directly or indirectly from Claim 13 which is believed allowable for the reasons set forth above.

Reconsideration of the rejection of dependent Claim 17 over Duran is respectfully requested. The Office Action states that Duran discloses a peripheral section including fingers with flared ends bent towards the center of the retainer. Applicant respectfully disagrees. Applicant respectfully states that there is no indication of flaring at the ends of the ears disclosed by Duran. Reconsideration is requested.

### **The §103 Rejections**

Reconsideration of the rejection of Claim 2 as obvious under 35 U.S.C. §103(a) over Duran in further view of U.S. Patent 5,967,721 to Giachinta et al. [hereinafter Giachinta] is respectfully requested. The Office Action states that Giachinta defines the nut engaging surface including two angled surface of Claim 2, and that Giachinta can be combined with Duran to disclose all elements of Claim 2. Applicant respectfully does not agree. There is no motivation in Duran to include any of the design elements of Giachinta. Giachinta discloses a fastener system with a nut and washer wherein the nut includes protrusions and the washer detents or vise-versa. The nut and washer combination functions when the protrusions are forced into the detents to create a system that resists loosening. If only the protrusions are combined with Duran, as suggested by the Office Action, the system is not effective. Duran does not include the required mating detents. Further, there is no motivation in Duran to change the existing nut and bolt locking system to a protrusion and detent system. Thus, the Duran and Giachinta references are not properly combinable and reconsideration of the rejection of Claim 2 is requested.

Additionally both the Duran reference, a previously described, and the Giachinta reference are deficient in teaching a cup shaped orientation between a base section and peripheral section of a spindle nut retainer.

Reconsideration of the rejection of Claim 7 as obvious under 35 U.S.C. §103(a) over Duran in further view of Giachinta is respectfully requested. The Office Action states that Giachinta defines an integrally formed ring at an end of said peripheral section opposite the base section. Applicant respectfully disagrees. Applicant has amended Claim 7 to clarify that the ring is at the end of the fingers of the peripheral section opposite the base section. Clearly Giachinta does not itself teach a ring at the end of fingers opposite a base section. There are no additional elements at the ends of the fins 200 of Giachinta opposite the shoulder section 23. Additionally, as stated above there is no motivation in Duran to combine the teachings of Giachinta with Duran and the references are mutually deficient in teaching a cup shaped orientation between a base section and peripheral section of a spindle nut retainer. Reconsideration of Claim 7 is requested.

Reconsideration of the rejection of Claim 6 as obvious under 35 U.S.C. §103(a) over Duran in further view of U.S. Patent 5,215,336 to Worthing is respectfully requested. Claim 6 depends directly from Claim 1 which is believed allowable for the reasons set forth above.

Reconsideration of the rejection of Claim 6 as obvious under 35 U.S.C. §103(a) over Duran in further view of U.S. Patent 5,618,143 to Cronin, II et al. is respectfully requested. Claim 10 depends directly from Claim 8 which is believed allowable for the reasons set forth above.

### New Claims

New Claim 18 claims fingers with lobes on the peripheral section of a spindle nut retainer. New Claim 19 claims the position of the base section of the spindle nut retainer of the invention with respect to the nut and spindle. The prior art does not disclose these limitations. New Claims 20-24 also disclose limitations not within the prior art. The new claims do not introduce new matter. Allowance of new claims 18-24 is requested. Additional fees are due for an extension of the time period to reply and for additional claims (large entity rate) in connection with this amendment. A check for \$194.00 has been included with this Response. The Examiner is authorized to charge deposit account 03-0172 for the additional fees required.

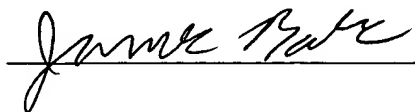
### CONCLUSION

For the reasons set forth above, Claims 1-10 and 12-24 patentably and unobviously distinguish over the references of record and are in condition for allowance. Notice to that effect is respectfully requested. In the event additional extensions are required or fees are due, the Examiner is authorized to treat this Response as a request for extension and charge deposit account 03-0172.

Respectfully Submitted,

Date: \_\_\_\_\_

3/25/03

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PATENT TRADEMARK OFFICE



Marked Specification

Page 2 Brief Description of Figures

Figure 1 is a cutaway view of a spindle nut locking system;

Figure 2 is a [top] front view of a spindle nut retainer;

Figure 3 is a side view of the spindle nut retainer; and

Figure 4 is a perspective view of an alternate embodiment of the spindle nut retainer.

Page 3 Paragraph 1

Embodiments of the spindle nut retainer 20 are shown in Figures 2, 3 and 4 and comprise an integral base section 22 and peripheral section 28 in a cup-shaped configuration. In separate embodiments the spindle nut retainer 20 is made from materials such as steel as shown in Figure 4, or polymer as shown in Figures 2 and 3. The base section 22 may be flat, having an interior face 24 and an exterior face 26. The base section 22 includes a centrally located aperture 34. The area of the base section 22 around the aperture 34 may be of increased thickness for structural reinforcement. In an embodiment wherein the spindle nut retainer is made of steel, the base section 22 may include a bent tab 25. The bent tab 25 may be integrally formed with the base section 22 and bent to extend from the base section 22 perpendicularly. The aperture 34 may be D-shaped. Throughout the specification, the term "D-shaped" refers to a truncated circular shape. A flat portion of the base section forming the flat section of the "D" is an interference surface 27. The interference surface 27 is transverse to the interior face 24 and exterior face 26 of the base section 22. As a result, there is rotational interference when the retainer 20 is positioned upon an area of the spindle 50 having a D-shaped cross section. In an embodiment wherein the spindle nut retainer is made of steel, the surface of bent tab 25 may be the interference surface 27. The base section 22 may include a manufacturer's brand name.

Page 5, Paragraph 1:

Referring to Figure 1, the spindle assembly 10 further comprises the nut 60 which includes exterior flats 62 and corners 64. The nut [62] 60 is commonly formed of steel. The nut 60 functions to hold a hub 70 upon the spindle 50. The nut 60 is threadedly engaged to the spindle 50. As previously described the nut 60 is locked in place by the spindle nut retainer 20.

The spindle assembly 10 may further comprise a hub 70. The hub 70 circumscribes the spindle 50 and rotates freely about the spindle 80. One or more bearings 90 are used between the hub 70 and spindle 50 to allow free rotational engagement. The hub 70 is located on the interior side of the nut 60 and is restrained from disengagement from the spindle 50 by the nut 60. The spindle assembly 10 may further comprise one or more washers 80. In an embodiment, a washer 80 is between the hub 70 and the nut 60. The washer 80 is flat and provides a surface which abuts both the hub 70 and the nut 60.

#### Marked Claims

1. A spindle nut retainer for preventing disengagement of a nut threadedly engaged to a spindle, comprising:

an integral base section and a generally perpendicular peripheral section maintaining a cup-shaped configuration while in place over the nut;

wherein said base section defines a central aperture; and

wherein said peripheral section has an interior surface and includes a plurality of fingers which define one or more longitudinal windows therebetween, said fingers including nut engaging surfaces on the interior surface of the peripheral section.

7. The spindle nut retainer of claim 1 wherein said peripheral section includes an integrally formed ring at an end of and interconnecting said fingers opposite said base section.

8. A spindle nut retainer for preventing disengagement of a nut threadedly engaged to a spindle, comprising:

an integral base section and a generally perpendicular peripheral section maintaining a cup-shaped configuration while in place over the nut;

wherein said base section defines a central aperture; and



wherein said peripheral section comprises a plurality of fingers which create one or more longitudinal windows therebetween, said fingers including a flared end bent towards the center of said spindle nut retainer.

13. A spindle nut locking system comprising:

a spindle having a first end;

a nut threadedly engaged to said spindle, said nut having flats;

a spindle nut retainer, circumscribing said nut and said spindle, comprising an integral base section and a generally perpendicular peripheral section maintaining a cup-shaped configuration wherein said base section defines a central aperture, and wherein said peripheral section includes a plurality of fingers which create one or more longitudinal windows therebetween.